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**Final Report on
the International WRI Symposium on**

**GUIDED-WAVE OPTOELECTRONICS:
Device Characterization, Analysis and Design**

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BACKGROUND AND PERSPECTIVES

The International Symposium on Guided-Wave Optoelectronics held October 26-28, 1994, was the fourth in the conference series sponsored by the Weber Research Institute of Polytechnic University. Following the successful format of preceding conferences, the Symposium strived to achieve a critical in-depth coverage of fundamental issues in a rapidly evolving area. Its aim was to examine guided-wave phenomena and related aspects of optoelectronics, and to review state-of-the-art techniques for solving electromagnetic problems that arise in that field.

The Symposium specifically addressed characterization and modeling methods that are most relevant to the analysis and design of optoelectronic devices. The focus was on composite devices employing guided-wave components that connect multiple optical and/or electronic elements in hybrid, integrated or other forms. Basic theory, analytical and numerical methods were stressed rather than fabrication and experimental techniques. Furthermore, all speakers were urged to start with a retrospective synopsis of approaches used in the past and to take a critical view of current techniques.

To provide a well coordinated coverage, distinguished experts in the area were invited to present review-type talks. The invited speakers were selected amongst prominent U.S. and foreign university and industry scientists who are active in the development and/or study of optoelectronics devices. The IEEE Lasers and Electro-Optics Society (IEEE/LEOS) and the Optical Society of America (OSA) agreed to cooperatively sponsor the Symposium. With their help, a call for papers was circulated and mailings were forwarded to members whose professional affiliation was in the area covered by the Symposium.

A substantial number of papers were accepted for presentation from industry, research center and academic institutes. Consistent with past WRI conferences, the Symposium program was structured so that no parallel sessions were held. A poster

session was also included in order to facilitate the presentation of a larger number of relevant papers. This format provided the participants with an interactive environment that fostered an integrated exposure to all facets covered by the Symposium.

Funding from several government agencies was obtained to support the Symposium. A major portion of this funding was used to support participating graduate students and post-Doctoral fellows from other Universities who could not otherwise afford to attend the meeting.

THE TECHNICAL PROGRAM

The finalized program included a total of 61 papers which were grouped into 13 sessions. The Symposium started with an Introductory Session involving invited overviews on optoelectronic devices and their commercial importance. This was followed by more specialized sessions, each of which opened with one or two invited talks followed by contributed papers. Discussions were encouraged after each paper. Additional lively and more detailed discussions continued during the intermissions, which were scheduled so as to offer ample time for that purpose.

The sessions included papers on:

- passive components (filters, routers, periodic structures, etc.),
- active components (semiconductor lasers and amplifiers, modulators, switches, etc.),
- nonlinear techniques and their application to new devices,
- numerical and analytical methods,
- novel techniques for potential applications in the future.

Comments received at and after the Symposium were very favorable and its basic scientific character was highly commended. Participants also noted that, in contrast to other meetings in this technical area, they had enjoyed the more relaxed focus that was placed on fundamental issues rather than on the intricacies of very specific devices. Younger attendees expressed their appreciation for the opportunity to become better acquainted with fundamental aspects of the optoelectronics area and to meet many of its respected leaders.

The Symposium Proceedings include almost all the papers that were presented. The sequence of these papers is somewhat different from that at the conference, mostly because each one is placed under its own appropriate area.

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